

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method for a mobile unit synchronizing with a base station in a WCDMA system, the base station transmitting a signal to the mobile unit, the signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, the method comprising:

receiving the signal;

sampling the signal in each slot period to generate a plurality of sample signals;

selecting either odd ones or even ones of the sample signals during a first slot period to be a first period signal;

obtaining a first slot timing according to the first period signal and the primary synchronization channel;

selecting even ones of the sample signals during a second slot period to be a second period signal if odd ones of the sample signals are selected during the first slot period, selecting odd ones of the sample signals during the second slot period to be the second period signal if even ones of the sample signals are selected during the first slot period;

obtaining a second slot timing and a slot synchronization signal according to the second period signal and the primary synchronization channel;

selecting even ones of the sample signals during a third slot period to be a third period signal if odd ones of the sample signals are selected during the second slot period, selecting odd ones of the sample signals during the third slot period to be a third period signal if even ones of the sample signals are selected during the second slot period;

obtaining a frame synchronization signal according to the first slot timing, the second slot timing, the slot synchronization signal, the secondary synchronization channel, and the third period signal; and

obtaining a scrambling-code identification signal according to the first slot timing, the second slot timing, the frame synchronization signal, and common pilot channel and the third period signal.

2-3. (Cancelled).

4. (Previously Presented) An apparatus for mobile unit synchronizing with a base station in a WCDMA system, the base station transmitting a signal to the mobile unit, the signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, the apparatus comprising:

a receiving unit for receiving the signal;

a sampling unit for sampling the signal in each slot period to generate a plurality of sample signals;

a selecting unit for selecting either odd ones or even ones of the sample signals during a first slot period to be a first period signal, selecting even ones of the sample signals during a second slot period to be a second period signal if odd ones of the sample signals are selected during the first slot period, selecting odd ones of the sample signals during the second slot period to be the second period signal if even ones of the sample signals are selected during the first slot period, selecting even ones of the sample signals during a third slot period to be a third period signal if odd ones of the sample signals are selected during the second slot period, selecting odd ones of the sample signals during the third slot period to be the third period signal if even ones of the sample signals are selected during the second slot period, and selecting even ones of the sample signals during a fourth slot period to be a fourth period signal if odd ones of the sample signals are selected during the third slot period, selecting odd ones of the sample signals during the fourth slot period to be the fourth period signal if even ones of the sample signals are selected during the third slot period;

a first synchronization unit for obtaining a first slot synchronization signal according to the first period signal and the primary synchronization channel, and obtaining a second slot

synchronization signal according to the second period signal and the primary synchronization channel;

a second synchronization unit for obtaining a first frame synchronization signal according to a first slot synchronization signal, the secondary synchronization channel, and the third period signal, and obtaining a second frame synchronization signal according to a second slot synchronization signal, the secondary synchronization channel, and the fourth period signal; and

a third synchronization unit for obtaining a first scrambling-code identification signal according to the first frame synchronization signal, the common pilot channel, and the third period signal.

5. (Previously Presented) The apparatus of claim 4, abandoning the first scrambling-code identification signal if the mobile unit does not synchronize with the base station, and obtaining a second scrambling-code identification signal according to the second frame synchronization signal, the common pilot channel and the fourth period signal.

6. (Previously Presented) The apparatus of claim 4, the first synchronization unit further obtaining a first slot timing according to the first period signal and the primary synchronization channel.

7. (Previously Presented) The apparatus of claim 6, the first synchronization unit further obtaining a second slot timing according to the second period signal and the primary synchronization channel.

8. (Previously Presented) The apparatus of claim 7, wherein the second synchronization unit obtains the second slot timing by referring to the first slot timing and the second slot timing.

9-13. (Cancelled).

14. (Previously Presented) A method for a mobile unit synchronizing with a base station, the base station transmitting a signal to the mobile unit, the signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, comprising:

receiving and sampling the signal in each slot period to generate a plurality of sample signals;

selecting either odd ones or even ones of the sample signals during a first slot period to be a first period signal;

obtaining a first slot timing according to the first period signal and the primary synchronization channel;

selecting even ones of the sample signals during a second slot period to be a second period signal if odd ones of the sample signals are selected during the first slot period, selecting odd ones of the sample signals during a second slot period to be a second period signal if even ones of the sample signals are selected during the first slot period;

obtaining a second slot timing and a slot synchronization signal according to the second period signal and the primary synchronization channel;

selecting even ones of the sample signals during a third slot period to be a third period signal if odd ones of the sample signals are selected during the second slot period, selecting odd ones of the sample signals during a third slot period to be a third period signal if even ones of the sample signals are selected during the second slot period;

achieving a frame synchronization according to the secondary synchronization channel, wherein both the first slot timing and the second slot timing are regarded as a reference for a slot timing in processing the frame synchronization; and

obtaining a scrambling-code identification signal according to the first slot timing, the second slot timing, the frame synchronization, and the common pilot channel and the third period signal.

15. (Previously Presented) A method for a mobile unit synchronizing with a base station, the base station transmitting a signal to the mobile unit, the signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, comprising:

receiving and sampling the signal in each slot period to generate a plurality of sample signals;

selecting either odd ones or even ones of the sample signals during a first slot period to be a first period signal;

obtaining a first slot timing according to the first period signal and the primary synchronization channel;

selecting even ones of the sample signals during a second slot period to be a second period signal if odd ones of the sample signals are selected during the first slot period, selecting odd ones of the sample signals during the second slot period to be the second period signal if even ones of the sample signals are selected during the first slot period;

obtaining a second slot timing according to the second period signal and the primary synchronization channel;

achieving a frame synchronization according to the secondary synchronization channel, wherein either the first slot timing or the second slot timing is selected as a slot timing in processing the frame synchronization.

16. (Previously Presented) The method of claim 15, wherein selecting either the first slot timing or the second slot timing as a slot timing in processing the frame synchronization further comprises:

obtaining a first peak profile of the first period signal;

obtaining a second peak profile of the second period signal; and

comparing the first peak profile and the second peak profile.